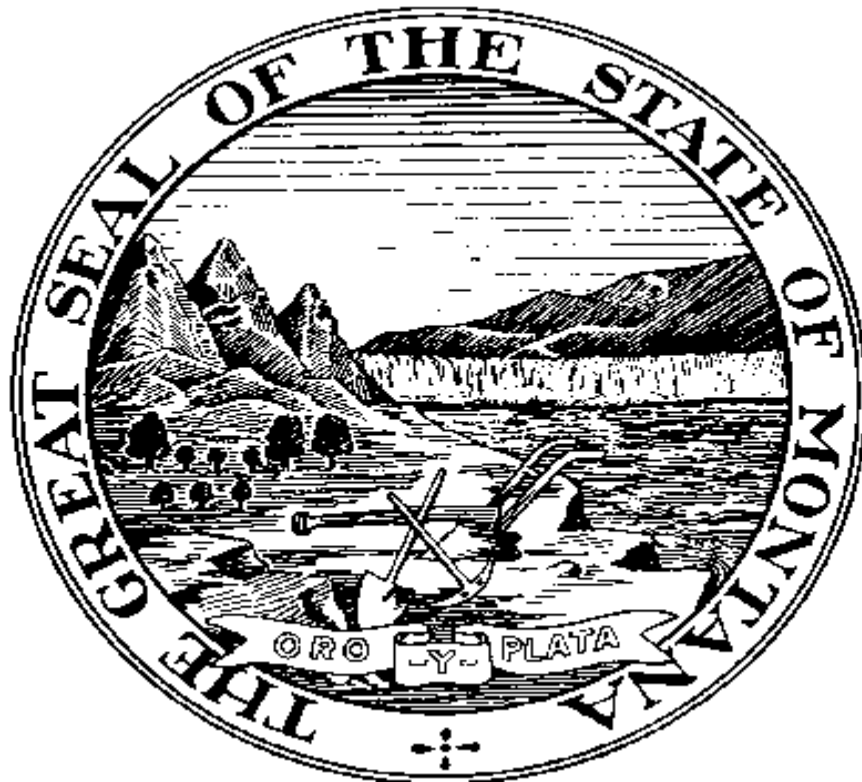


Hantavirus Infection

Prevention Guidelines

Occupational Safety & Health Bureau



Montana Department of Labor & Industry

Prepared for Montana Employers
By the

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Hantavirus Infection

What is Hantavirus?

Hantavirus is a virus that is found in the urine, saliva, or droppings of infected wild rodents such as deer mice. Mice do not appear ill while carrying the Hantavirus. It causes a rare but serious lung disease called hantavirus pulmonary syndrome (HPS).

How does a person get Hantavirus?

A person can contract the Hantavirus from inhaling airborne particles of urine, saliva, or droppings from infected rodents. Handling infected rodents, their nests or droppings, and then touching the person's nose, mouth or eyes may also spread the virus. Transmission can also occur when contaminated material gets into broken skin or ingested in contaminated food or water. Persons have also become infected after being bitten by rodents.

Can the Hantavirus be spread from person to person?

There have been no reported cases of the North American Hantavirus being spread from person to person

How does Hantavirus affect your health?

Hantavirus can cause a disease called hantavirus pulmonary syndrome (HPS). The disease is very serious since 50–60% of the people who get this disease die. The disease begins as a flu-like illness. In the early stages, an infected individual may experience fever, chills, muscle aches, headaches, coughing, nausea, vomiting, shortness of breath, tiredness, and diarrhea. If you have been exposed to rodents and experience these symptoms, see your health care provider immediately.

HPS progresses rapidly and infected people experience an abnormal fall in blood pressure and their lungs will fill with fluid. Severe respiratory failure, resulting in death, can occur within a few days of the early symptoms.

The chances of getting HPS are very low but if you do get the disease, it can be very serious.

How soon after contact with Hantavirus do symptoms appear?

Based on available information, the first symptoms may appear from one to six (usually 2-3) weeks after contact with the virus.

Is there any treatment available for persons with the Hantavirus Infection?

Some patients are being treated with an experimental drug available only through the Centers for Disease Control and Prevention. Others have recovered with standard hospital care. Treatment options are still being explored. Persons suspecting hantavirus infection should see a physician immediately.

Can pets transfer Hantavirus?

Cats and dogs are not known to have spread the Hantavirus from rodent to person. Also, predators such as snakes, owls, hawks, and coyotes help control rodents and do not spread the virus.

What occupations are at risk?

Anything that puts you in contact with rodent droppings, urine or nesting materials can cause an exposure to the Hantavirus. Cases of Hantavirus infection contracted in North America have been associated with:

- Sweeping out a barn and other ranch buildings;
- Trapping and studying mice;
- Handling grain contaminated with mouse droppings and urine;
- Using compressed air and dry sweeping to clean up wood waste in a sawmill;
- Entering buildings infested with mice;
- Cleaning out farm and construction equipment;
- Planting or harvesting field crops; and
- Occupying previously vacant dwellings.

There is a potential risk to those working in enclosed spaces such as attics or crawl spaces that have been infested with rodents. It is recommended that people who work in heavily infested enclosed spaces wear a properly fitted respirator.

Certain occupations such as phone workers, plumbers, pest control agents, electricians, and those who work in attics, under houses or in other enclosed spaces may need to take special precautions such as using a respirator. When an employee needs a respirator to safely perform the job, the employer must set up a respirator plan according to Occupational Safety and Health Administration (OSHA) standards. The respirator standard is 29 CFR 1910.134.

What rodents carry Hantavirus in Montana?

The **deer mouse** is the most common carrier of the Hantavirus in Montana.



Image provided courtesy of Centers for Disease Control and Prevention and The Partnership, INC.

The deer mouse (*Peromyscus maniculatus*) is small with big eyes and big ears. Its head and body are normally about 2-3 inches long, and the tail is also about another 2-3 inches. It is found in a variety of colors, from gray to reddish brown, depending on its age. The underbelly is always white and the tail is brown with white sides. It can be found almost everywhere in North America. According to the Center of Disease Control (CDC), there has been nine recorded cases of Hantavirus in Montana as of August 10, 1999 (see graph A, page 8).

Tips for Preventing HPS

1. Clean up infested areas, using safety precautions:

- When going into buildings or work areas that are contaminated with rodents, open windows and air them out before cleaning.
- Put on latex rubber gloves or alternative latex free chemical resistant gloves before cleaning up.
- Do not stir up dust by sweeping or vacuuming up droppings or nesting materials.
- Thoroughly wet contaminated areas and dead rodents with 10% bleach solution; 1 ½ cups bleach per gallon of water.
- Let the area soak thoroughly for 10-15 minutes.
- Remove dead rodents and nest materials using long-handled shovel or rubber gloves.

- Double-bag dead rodents and nesting material in plastic bags and bury them in a 2-to 3-foot-deep hole or contact the local or state health department concerning other appropriate disposal methods.
- Disinfect countertops, cabinets, drawers, and other durable surfaces by washing them with the bleach solution (if it will not damage them), followed by wiping down with a general-purpose household disinfectant.
- Using a mop or paper towels and more disinfectant clean entire area. Double-bag all paper towels, rags, and infected mop-head and dispose of them in a tightly covered trash container.
- When clean up is complete, disinfect gloves before taking them off with disinfectant or soap and water. After taking off the clean gloves, thoroughly wash hands with warm water and soap.
- Launder potentially contaminated bedding and clothing with hot water and detergent (Use rubber or plastic gloves when handling the dirty laundry).
- Carpets should be disinfected using steam cleaning or shampooing.
- Do not sweep with a broom or vacuum until the area has been disinfected. Dirt floors may be sprayed with a disinfectant solution.

2. Special precautions for heavy rodent infestations

Persons conducting clean-up on heavily rodent infested buildings must follow special precautions to reduce the risk of exposure. If you are attempting to deal with a heavily infested area, it is recommended that you contact the responsible local, state, or federal public health agency for guidance. Workers who are either hired to perform the clean-up or asked to do so as part of their work activities must receive thorough training about hantavirus transmission and proper cleaning methods.

Precautions to be followed:

- A baseline serum sample, preferably drawn at the time these prevention activities are initiated, should be available for all persons conducting the clean-up of homes or buildings with heavy rodent infestations. The serum sample should be stored at –20 C.
- Workers involved in clean-up should wear coveralls (disposable if possible), rubber boots or disposable shoe covers, rubber or plastic gloves, protective goggles, and a appropriate respiratory protection device, such as a half-mask air-purifying (or negative-pressure) respirator with a high-efficiency particulate air (HEPA) filter or a powered air-purifying respirator (PAPR) with HEPA filters.

- Personal protective gear should be decontaminated upon removal at the end of the day. If the coveralls are not disposable, they should be laundered on site. If there is no laundry facilities available, the coveralls should be immersed in liquid disinfectant at the site.
- All potentially infective waste material (including respirator filters) from clean-up operations that cannot be burned or deep buried on site should be double bagged in appropriate plastic bags. The bagged material should then be labeled as infectious (it should not be transported) and disposed of in accordance with local requirements for infectious waste.
- Workers who develop symptoms suggestive of HPS within 45 days of the potential exposure should immediately seek medical attention.

3. General Precautions in Affected Areas.

Rodent control in and around buildings is the primary prevention strategy. Listed below are CDC recommendations for reducing rodent populations through habitat modification and sanitation.

- Keep food (including pet food) and water covered and stored in rodent-proof containers with tight-fitting lids. Keep the lids on.
- Store garbage inside homes in rodent-proof metal or thick plastic containers with tight-fitting lids.
- Wash dishes and cooking utensils immediately after use and remove all spilled food.
- Dispose of trash and clutter
- Use spring-loaded rodent traps; use rodenticide with bait under a plastic or plywood shelter on an ongoing basis. Remember to disinfect traps before handling them and dispose of dead rodents as suggested above.

Prevent rodents from entering homes or facilities by:

- Use steel, wood or cement to seal, screen, or otherwise cover all openings into the home that have a diameter greater than or equal to ¼ inch.
- Place metal roof flashing as a rodent barrier around the base of wooden, earthen, or cement block dwellings up to a height of 12 inches and buried in the soil to a depth of 6 inches.
- Place 3 inches of gravel under the base of homes or under mobile homes to discourage rodent burrowing.

Reduce rodent shelter and food sources within 100 feet of buildings.

- Use raised cement foundations in new construction of sheds, barns, outbuilding, or woodpiles.
- When possible, place woodpiles at least 100 feet from the house, and elevate wood off the ground.
- Store grains and animal feed in rodent-proof containers.
- Near buildings, remove food sources that might attract rodents, or store food and water in rodent-proof containers.
- Store hay on pallets, and use traps to keep hay free of rodents.
- Do not leave pet food in feeding dishes.
- Dispose of garbage and trash in rodent-proof containers that are elevated at least 12 inches off the ground.
- Haul away trash, abandoned vehicles, discarded tires, and other items that may serve as rodent nesting sites.
- Cut grass, brush, and dense shrubbery within 100 feet of the home.
- Place spring loaded traps at likely spots for rodent shelter within 100 feet around buildings, and use continuously.

Resources

1. National Center for Infectious Diseases
The Centers for Disease Control and Prevention (CDC)
1600 Clifton Rd.
Atlanta, GA 30333
Phone: (404) 639-3534; 1-800-331-3435
Web site: www.cdc.gov

Hantavirus Illness, United States As of August 10, 1999 (N=222)



CDC

Graph A. Hantavirus Illnesses in the U.S
Graph provided by the Centers for Disease Control